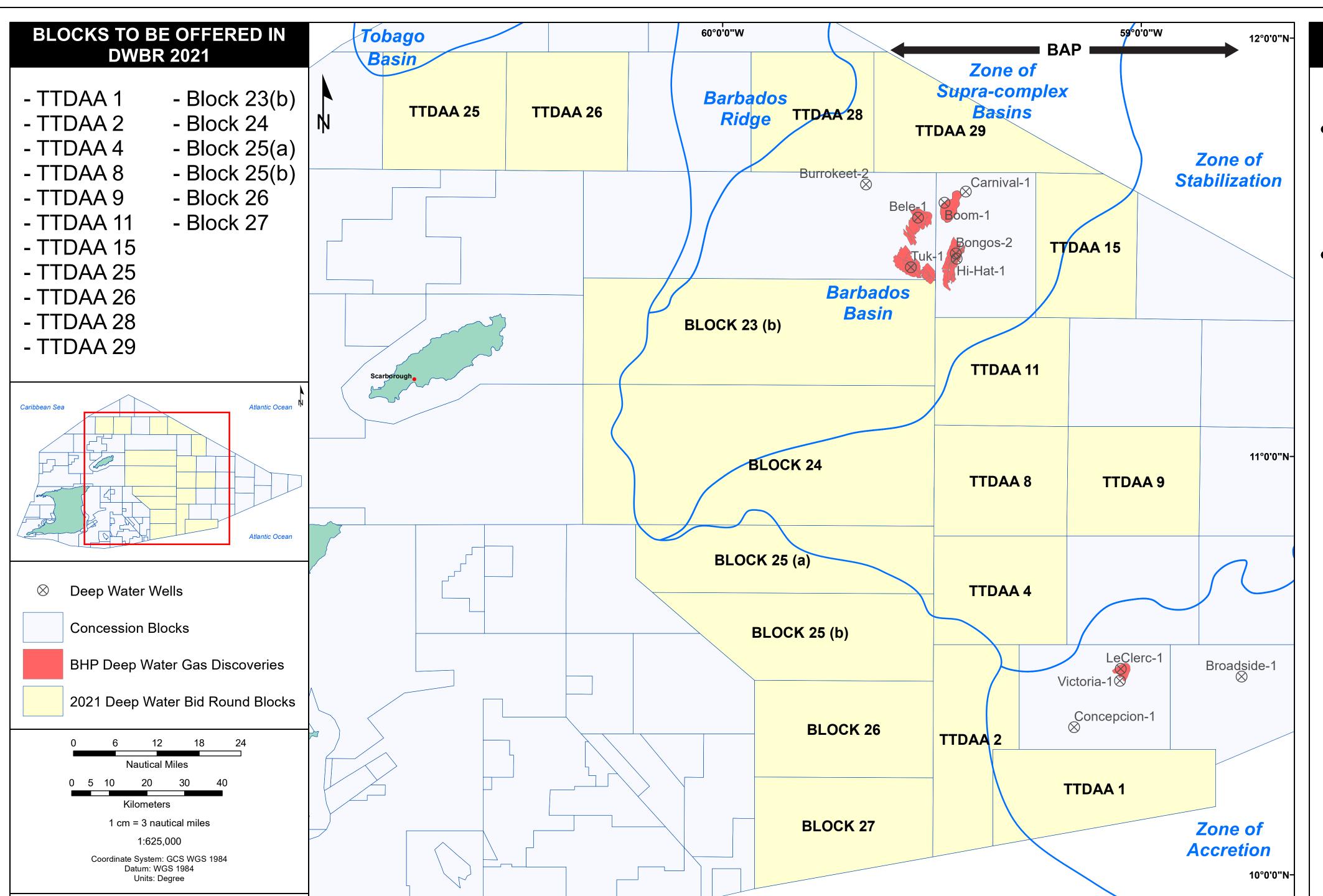
# DEEP WATER COMPETITIVE BIDDING ROUND 2021



Date: November 2021 MEEI GIS Unit

#### REGIONAL GEOLOGY

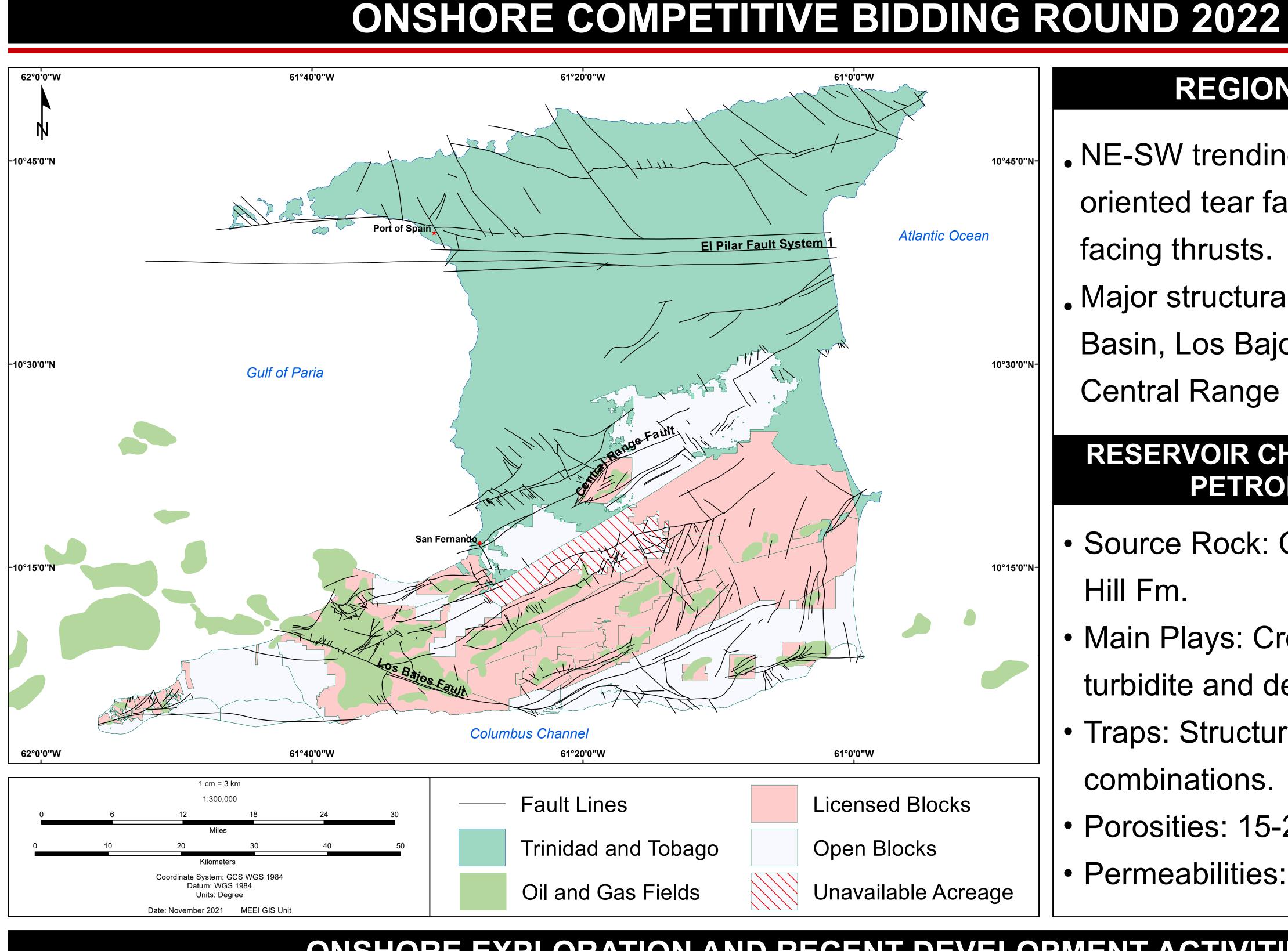
- Water depths range from 1500-2500m.
- Key structural elements impacting this region:
- Tobago Basin
- Barbados Basin
- Barbados Ridge
- Barbados Accretionary Prism (Zone of Supra-Complex Basins, Zone of Stabilization and Zone of Accretion) (Modified from Alvarez et al. (2016))

## RESERVOIR CHARACTERISTICS

- BHP Billiton undertook an exploration drilling campaign between 2016-2021 including 11 deep water wells, which has confirmed a working petroleum system with a known Cretaceous source.
- Reservoirs are Miocene-Pleistocene in age, with average porosities ranging from 18-30%, permeabilities from 130-3000mD and water saturations from 20-40%.
- Hydrocarbon seep studies and piston coring surveys prove basin's potential for both biogenic and thermogenic gas as well as oil.

#### RECENT EXPLORATION AND DEVELOPMENT ACTIVITIES

- 2020 Natural Gas Reserves Audit conducted by Ryder Scott Consultants confirmed additional unrisked reserves of 4.5 TCF in a portion of the open deep water acreage.
- BHP's exploration campaign has estimated the licensed deep water acreage to possess a proven 6.6 TCF of commercial natural gas.
- Calypso Development project estimated to be brought online in the late 2020's with 10-25 production wells over the lifetime of the project and a capacity for 600-1000 mmcf/d.
- BHP's exploration drilling success rate for the deep water acreage to date is favorably high at 64%.
- Exploration continues in efforts to assess the commerciality of the remaining hydrocarbon discoveries.



## REGIONAL GEOLOGY

- NE-SW trending anticlines with NW-SE oriented tear faults and southward facing thrusts.
- Major structural features: Southern Basin, Los Bajos Fault Zone and Central Range Fault Zone.

### RESERVOIR CHARACTERISTICS AND PETROLEUM SYSTEM

- Source Rock: Cretaceous Naparima Hill Fm.
- Main Plays: Cretaceous to Pleistocene turbidite and deltaic deposits.
- Traps: Structural/stratigraphic combinations.
- Porosities: 15-20%.
- Permeabilities: 250-1000 mD.

- From 1857 to present, approximately 13,000 oil wells have been drilled within the Southern Basin of Trinidad, producing more than 3.5 billion barrels of oil, primarily from Late Miocene to Pleistocene deltaic sandstones.
- Exploration onshore has seen recent new successes in such a mature province with discoveries from Touchstone Exploration and Challenger Energy in recent years.
- Touchstone began their drilling campaign in the Ortoire Block in 2019. To date, four commercial hydrocarbon accumulations have been discovered, with the Cascadura discovery reported to be largest onshore gas discovery in Trinidad's history among them at 381 bcf.
- Challenger Energy discovered an estimated 11 MMbbl of oil in the Bonasse acreage in 2020. Other prospects are currently being analyzed.